```
$  * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 14:20:55 ON 03 FEB 2005

=> fil .bec
COST IN U.S. DOLLARS                                    SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

FILES 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS, NTIS,
       ESBIOBASE, BIOTECHNO, WPIDS' ENTERED AT 14:21:10 ON 03 FEB 2005
ALL COPYRIGHTS AND RESTRICTIONS APPLY.  SEE HELP USAGETERMS FOR DETAILS.

11 FILES IN THE FILE LIST

=> s gst or glutathione s transferase#
FILE 'MEDLINE'
          8489 GST
         63803 GLUTATHIONE
       4782567 S
         51467 TRANSFERASE#
         13349 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L1       16158 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'SCISEARCH'
          8465 GST
         59101 GLUTATHIONE
       1551884 S
         41451 TRANSFERASE#
         15904 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L2       18649 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'LIFESCI'
          3493 GST
         15308 "GLUTATHIONE"
        333053 "S"
         13412 TRANSFERASE#
          5563 GLUTATHIONE S TRANSFERASE#
                 ("GLUTATHIONE"(W)"S"(W)TRANSFERASE#)
L3        6722 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'BIOTECHDS'
           632 GST
          2232 GLUTATHIONE
         47553 S
          3304 TRANSFERASE#
           638 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L4          932 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'BIOSIS'
         10353 GST
         70575 GLUTATHIONE
       1277305 S
         73331 TRANSFERASE#
         18127 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L5       21710 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'EMBASE'
          7814 GST
         55055 "GLUTATHIONE"
```

```
       1214035 "S"
         37824 TRANSFERASE#
         12316 GLUTATHIONE S TRANSFERASE#
                 ("GLUTATHIONE"(W)"S"(W)TRANSFERASE#)
L6       14834 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'HCAPLUS'
         10880 GST
         79532 GLUTATHIONE
       2640352 S
         49050 TRANSFERASE#
         18752 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L7       22102 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'NTIS'
            61 GST
           488 GLUTATHIONE
        428304 S
          1258 TRANSFERASE#
            58 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L8          101 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'ESBIOBASE'
          5930 GST
         24718 GLUTATHIONE
        402784 S
         31938 TRANSFERASE#
          8415 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L9       10365 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'BIOTECHNO'
          4283 GST
         16276 GLUTATHIONE
        236253 S
         16723 TRANSFERASE#
          6443 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L10       7999 GST OR GLUTATHIONE S TRANSFERASE#

FILE 'WPIDS'
           587 GST
          3155 GLUTATHIONE
       3914270 S
          5086 TRANSFERASE#
           706 GLUTATHIONE S TRANSFERASE#
                 (GLUTATHIONE(W)S(W)TRANSFERASE#)
L11        989 GST OR GLUTATHIONE S TRANSFERASE#

TOTAL FOR ALL FILES
L12     120561 GST OR GLUTATHIONE S TRANSFERASE#

=> s l12 and (engineer? or shuffl?)
FILE 'MEDLINE'
         57012 ENGINEER?
          1384 SHUFFL?
L13        127 L1 AND (ENGINEER? OR SHUFFL?)

FILE 'SCISEARCH'
        120882 ENGINEER?
          2574 SHUFFL?
L14        135 L2 AND (ENGINEER? OR SHUFFL?)
```

```
FILE 'LIFESCI'
         19447 ENGINEER?
           767 SHUFFL?
L15         68 L3 AND (ENGINEER? OR SHUFFL?)

FILE 'BIOTECHDS'
         25090 ENGINEER?
           438 SHUFFL?
L16         97 L4 AND (ENGINEER? OR SHUFFL?)

FILE 'BIOSIS'
        158503 ENGINEER?
          1480 SHUFFL?
L17        394 L5 AND (ENGINEER? OR SHUFFL?)

FILE 'EMBASE'
         80450 ENGINEER?
          1183 SHUFFL?
L18        138 L6 AND (ENGINEER? OR SHUFFL?)

FILE 'HCAPLUS'
        142484 ENGINEER?
          2377 SHUFFL?
L19        324 L7 AND (ENGINEER? OR SHUFFL?)

FILE 'NTIS'
        181871 ENGINEER?
           269 SHUFFL?
L20          5 L8 AND (ENGINEER? OR SHUFFL?)

FILE 'ESBIOBASE'
         46992 ENGINEER?
           869 SHUFFL?
L21        625 L9 AND (ENGINEER? OR SHUFFL?)

FILE 'BIOTECHNO'
         62582 ENGINEER?
           812 SHUFFL?
L22        121 L10 AND (ENGINEER? OR SHUFFL?)

FILE 'WPIDS'
        156575 ENGINEER?
          1185 SHUFFL?
L23         41 L11 AND (ENGINEER? OR SHUFFL?)

TOTAL FOR ALL FILES
L24       2075 L12 AND (ENGINEER? OR SHUFFL?)

=> s l24 not 2000-2005/py
FILE 'MEDLINE'
       2727691 2000-2005/PY
L25         59 L13 NOT 2000-2005/PY

FILE 'SCISEARCH'
       5097493 2000-2005/PY
L26         68 L14 NOT 2000-2005/PY

FILE 'LIFESCI'
        512467 2000-2005/PY
L27         41 L15 NOT 2000-2005/PY

FILE 'BIOTECHDS'
        105642 2000-2005/PY
```

```
L28          19 L16 NOT 2000-2005/PY

FILE 'BIOSIS'
       2625073 2000-2005/PY
L29         245 L17 NOT 2000-2005/PY

FILE 'EMBASE'
       2367945 2000-2005/PY
L30          94 L18 NOT 2000-2005/PY

FILE 'HCAPLUS'
       5123281 2000-2005/PY
L31         101 L19 NOT 2000-2005/PY

FILE 'NTIS'
         80220 2000-2005/PY
L32           4 L20 NOT 2000-2005/PY

FILE 'ESBIOBASE'
       1468247 2000-2005/PY
L33         408 L21 NOT 2000-2005/PY

FILE 'BIOTECHNO'
        491187 2000-2005/PY
L34          92 L22 NOT 2000-2005/PY

FILE 'WPIDS'
       4509723 2000-2005/PY
L35           4 L23 NOT 2000-2005/PY

TOTAL FOR ALL FILES
L36        1135 L24 NOT 2000-2005/PY

=> s l36 and herbicide#
FILE 'MEDLINE'
          9782 HERBICIDE#
L37          0 L25 AND HERBICIDE#

FILE 'SCISEARCH'
         23835 HERBICIDE#
L38          0 L26 AND HERBICIDE#

FILE 'LIFESCI'
          6075 HERBICIDE#
L39          0 L27 AND HERBICIDE#

FILE 'BIOTECHDS'
          5341 HERBICIDE#
L40          1 L28 AND HERBICIDE#

FILE 'BIOSIS'
         48036 HERBICIDE#
L41          2 L29 AND HERBICIDE#

FILE 'EMBASE'
          9336 HERBICIDE#
L42          1 L30 AND HERBICIDE#

FILE 'HCAPLUS'
         80562 HERBICIDE#
L43          0 L31 AND HERBICIDE#

FILE 'NTIS'
          3734 HERBICIDE#
```

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L44           0 L32 AND HERBICIDE#

FILE 'ESBIOBASE'
          7623 HERBICIDE#
L45           2 L33 AND HERBICIDE#

FILE 'BIOTECHNO'
          3463 HERBICIDE#
L46           1 L34 AND HERBICIDE#

FILE 'WPIDS'
         30403 HERBICIDE#
L47           0 L35 AND HERBICIDE#

TOTAL FOR ALL FILES
L48           7 L36 AND HERBICIDE#

=> dup rem l48
PROCESSING COMPLETED FOR L48
L49           6 DUP REM L48 (1 DUPLICATE REMOVED)

=> d tot

L49   ANSWER 1 OF 6  Elsevier BIOBASE  COPYRIGHT 2005 Elsevier Science B.V. on
      STN
AN    1999198043   ESBIOBASE
TI    Characterization of recombinant corn glutathione S-
      transferase isoforms I, II, III, and IV
AU    Sommer A.; Boger P.
CS    A. Sommer, Lehrstuhl fur Physiologie, Biochemie der Pflanzen, Universitat
      Konstanz, D-78457 Konstanz, Germany.
SO    Pesticide Biochemistry and Physiology, (1999), 63/3 (127-138), 41
      reference(s)
      CODEN: PCBPBS  ISSN: 0048-3575
DT    Journal; Article
CY    United States
LA    English
SL    English

L49  ANSWER 2 OF 6  EMBASE  COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
     on STN                                              DUPLICATE 1
TI   Bacterial glutathione S-transferases: What
     are they good for?.
SO   Journal of Bacteriology, (1997) 179/5 (1431-1441).
     Refs: 94
     ISSN: 0021-9193  CODEN: JOBAAY
AU   Vuilleumier S.
AN   97071227  EMBASE

L49   ANSWER 3 OF 6  Elsevier BIOBASE  COPYRIGHT 2005 Elsevier Science B.V. on
      STN
AN    1997147773   ESBIOBASE
TI    Soluble overexpression in Escherichia coli, and purification and
      characterization of wild-type recombinant tobacco acetolactate synthase
AU    Chang S.-I.; Kang M.-K.; Choi J.-D.; Namgoong S.K.
CS    S.-I. Chang, Department of Biochemistry, Chungbuk National University,
      Cheongju 361-763, South Korea.
      E-mail: sichang@cbucc.chungbuk.ac.kr
SO    Biochemical and Biophysical Research Communications, (1997), 234/3
      (549-553), 35 reference(s)
      CODEN: BBRCA0  ISSN: 0006-291X
DT    Journal; Article
CY    United States
LA    English
```

SL English

L49 ANSWER 4 OF 6 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI GENETICALLY **ENGINEERED** PLANTS FOR **HERBICIDE** RESISTANCE.
SO Biotechnol. Agric. Ser., (1992) pp. 75-107. GATEHOUSE, A. M. R., V. A. HILDER AND D. BOULTER (ED.). BIOTECHNOLOGY IN AGRICULTURE, NO. 7. PLANT GENETIC MANIPULATION FOR CROP PROTECTION. XIII+266P. C.A.B. INTERNATIONAL: WALLINGFORD, ENGLAND, UK; TUCSON, ARIZONA, USA. ILLUS.
Publisher: Series: Biotechnology in Agriculture Series.
CODEN: BIAGEN. ISSN: 0960-202X. ISBN: 0-85198-707-9.
AU MULLINEAUX P M [Reprint author]
AN 1992:419952 BIOSIS

L49 ANSWER 5 OF 6 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI TOTAL CHEMICAL SYNTHESIS AND EXPRESSION IN ESCHERICHIA-COLI OF A MAIZE GLUTATHIONE TRANSFERASE **GST** GENE.
SO Gene (Amsterdam), (1989) Vol. 76, No. 1, pp. 153-160.
CODEN: GENED6. ISSN: 0378-1119.
AU WOSNICK M A [Reprint author]; BARNETT R W; CARLSON J E
AN 1989:268026 BIOSIS

L49 ANSWER 6 OF 6 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
TI Structural analysis of a maize gene coding for **glutathione-S-transferase** involved in **herbicide** detoxification;
cloning and DNA sequence
SO Plant Mol.Biol.; (1986) 6, 4, 203-11
CODEN: PMBIDB
AU Shah D M; Hironaka C M; Wiegand R C; Harding E I; Krivi G G; Tiemeier C
AN 1986-05927 BIOTECHDS

=> d ab tot

L49 ANSWER 1 OF 6 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AB **Glutathione S-transferases** (GSTs) are involved in detoxification of a wide variety of electrophilic compounds including **herbicides.** Several corn isoforms (GSTs) have been studied for their ability to conjugate these substrates with reduced glutathione (GSH). Three cDNAs, encoding corn **GST** subunits of 29, 27, and 26 kDa, respectively, were cloned into expression systems in Escherichia coli. N-terminal 6xHis-tagged recombinant **GST** isoforms I, II, III, and IV were purified with nickel-nitrilotriacetic acid (Ni-NTA) metal-affinity chromatography and were analyzed biochemically. As the corn enzymes, each recombinant **GST** isoform also consists of two subunits. Using three different **GST** -substrates, recombinant isoforms showed similar substrate specificities as natural corn GSTs. Some **GST** isoforms may be involved in the defense response to oxidative stress in plants. Besides standard **GST** activities, inactivation of endogenous, toxic α,β-unsaturated aldehydes was measured. Furthermore two recombinant **GST** isoforms (**GST** II and **GST** IV) showed high glutathione peroxidase activity using three different organic hydroperoxides as substrates. Apparently, **GST** isoforms including the 27-kDa subunit show glutathione peroxidase activity.

L49 ANSWER 2 OF 6 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 1

L49 ANSWER 3 OF 6 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AB Acetolactate synthase (ALS) is the first common enzyme in the

biosynthesis of L-leucine, L-isoleucine, and L-valine. The wild-type ALS gene from Nicotiana tabacum was cloned into the bacterial expression vector pGEX-2T. The resulting recombinant plasmid pGEX-ALS2 was used to transform Escherichia coli strain XL1-Blue, and the wild-type tobacco ALS (wALS) was expressed in the bacteria as a protein fused with **glutathione S-transferase** (**GST**).
The fusion product **GST**-wALS was purified in a single step on a glutathione-Sepharose column. The purified **GST**-wALS was sensitive to a sulfonylurea **herbicide**, and was lost its sensitivity to end products, L-valine, L-leucine and L-isoleucine. These results suggest that the purified recombinant tobacco ALS was functionally active, and that the sulfonylureas may not bind to the feedback regulatory site on the plant ALS.

L49 ANSWER 4 OF 6 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN

L49 ANSWER 5 OF 6 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
AB We have constructed a totally synthetic gene encoding a maize **glutathione S-transferase** (**GST** I).
This gene, composed of 1320 nucleotides (nt) (660 bp), was assembled from only 16 synthetic oligodeoxynucleotides (average length 83 nt), using an efficient one-step annealing/ligation protocol. Sequencing was performed to verify the authenticity of the final assembled gene. Significantly, not a single mutation was found in either of the two constructs sequenced, indicating a remarkably low mutation frequency. The synthetic gene was introduced into Escherichia coli where it was successfully expressed. The biological activity of the **GST** I enzyme produced in E. coli was monitored by assaying bacterial extracts for the ability to conjugate [14C]atrazine in the presence of glutathione. This biologically active synthetic GST1 gene can now be introduced into plants to assess its ability to confer tolerance to the triazine class of **herbicides.**

L49 ANSWER 6 OF 6 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AB **Glutathione-S-transferase** (GSTs) are a family of enzymes able to detoxify sulfhydryl **herbicides.** A cDNA clone encoding **GST**/I of maize was obtained by screening a lambda-gt10 cDNA library of maize polyA+ RNA with a mixed synthetic oligonucleotide probe based on the previously determined amino acid sequence of **GST** I polypeptide. This **GST** I cDNA clone, pMON9000, contains an insert of approximately 740 bp which is sufficient to encode the entire protein coding sequence. Using this insert as a hybridization probe the organization of nuclear gene encoding the **GST** I polypeptide was examined and a 10.2 kb EcoRI fragment was obtained from the inbred maize line Missouri 17 DNA which contains the entire **GST** I coding sequence. This EcoRI fragment was cloned and the DNA sequence of this and the cDNA clone determined. The mRNA homologous sequences in the maize **GST** I gene consisted of a 107 bp 5' untranslated region, a 642 bp coding region and 340 bp of the 3' untraslated region. They were divided into 3 exons. This should facilitate further molecular genetic **engineering** of this enzyme. (25 ref)

```
=> s l36 and plant#
FILE 'MEDLINE'
        238000 PLANT#
L50          1 L25 AND PLANT#

FILE 'SCISEARCH'
        390465 PLANT#
L51          2 L26 AND PLANT#

FILE 'LIFESCI'
        163754 PLANT#
```

```
L52           0 L27 AND PLANT#

FILE 'BIOTECHDS'
         56623 PLANT#
L53           3 L28 AND PLANT#

FILE 'BIOSIS'
       2314416 PLANT#
L54          25 L29 AND PLANT#

FILE 'EMBASE'
        178218 PLANT#
L55           1 L30 AND PLANT#

FILE 'HCAPLUS'
        909118 PLANT#
L56          10 L31 AND PLANT#

FILE 'NTIS'
        145402 PLANT#
L57           0 L32 AND PLANT#

FILE 'ESBIOBASE'
        308875 PLANT#
L58          18 L33 AND PLANT#

FILE 'BIOTECHNO'
         98706 PLANT#
L59           3 L34 AND PLANT#

FILE 'WPIDS'
        254212 PLANT#
L60           0 L35 AND PLANT#

TOTAL FOR ALL FILES
L61          63 L36 AND PLANT#

=> dup rem l61
PROCESSING COMPLETED FOR L61
L62          49 DUP REM L61 (14 DUPLICATES REMOVED)

=> d tot

L62  ANSWER 1 OF 49  BIOSIS  COPYRIGHT (c) 2005 The Thomson Corporation.  on
     STN
TI   Functional domain analysis of the yeast ABC transporter Ycf1p by
     site-directed mutagenesis.
SO   Journal of Biological Chemistry, (Aug. 13, 1999) Vol. 274, No. 33, pp.
     23584-23590. print.
     CODEN: JBCHA3. ISSN: 0021-9258.
AU   Falcon-Perez, Juan M.; Mazon, Maria J.; Molano, Jesus; Eraso, Pilar
     [Reprint author]
AN   1999:468037  BIOSIS

L62   ANSWER 2 OF 49  Elsevier BIOBASE  COPYRIGHT 2005 Elsevier Science B.V. on
      STN
AN    1999154929   ESBIOBASE
TI    Molecular cloning and characterization of MT-ACT48, a novel mitochondrial
      acyl-CoA thioesterase
AU    Poupon V.; Begue B.; Gagnon J.; Dautry-Varsat A.; Cerf-Bensussan N.;
      Benmerah A.
CS    A. Benmerah, CJF 97-10 INSERM, Faculte Necker-Enfants Malades, 156 rue de
      Vaugirard, 75756 Paris Cedex 15, France.
      E-mail: benmerah@necker.fr
```

SO Journal of Biological Chemistry, (02 JUL 1999), 274/27 (19188-19194), 34 reference(s)
CODEN: JBCHA3 ISSN: 0021-9258
DT Journal; Article
CY United States
LA English
SL English

L62 ANSWER 3 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Dbp5, a DEAD-box protein required for mRNA export, is recruited to the cytoplasmic fibrils of nuclear pore complex via a conserved interaction with CAN/Nup159p.
SO EMBO (European Molecular Biology Organization) Journal, (Aug. 2, 1999) Vol. 18, No. 15, pp. 4332-4347. print.
CODEN: EMJODG. ISSN: 0261-4189.
AU Schmitt, Christel; von Kobbe, Cayetano; Bachi, Angela; Pante, Nelly; Rodrigues, Joao P.; Boscheron, Cecile; Rigaut, Guillaume; Wilm, Matthias; Seraphin, Bertrand; Carmo-Fonseca, Maria; Izaurralde, Elisa [Reprint author]
AN 1999:449640 BIOSIS

L62 ANSWER 4 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Molecular **engineering** of **plants** with tolerance to photooxidative damage
SO Tanpakushitsu Kakusan Koso (1999), 44(15, Zokan), 2246-2252
CODEN: TAKKAJ; ISSN: 0039-9450
AU Shigeoka, Shigeru; Tamoi, Masahiro; Miyagawa, Yoshiko
AN 1999:723375 HCAPLUS
DN 131:334556

L62 ANSWER 5 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Enhancement of scopolamine production in Hyoscyamus muticus hairy root cultures by genetic **engineering**
SO Planta (1999), 208(4), 545-551
CODEN: PLANAB; ISSN: 0032-0935
AU Jouhikainen, Katja; Lindgren, Laura; Jokelainen, Tuula; Hiltunen, Raimo; Teeri, Teemu H.; Oksman-Caldentey, Kirsi-Marja
AN 1999:430851 HCAPLUS
DN 131:98203

L62 ANSWER 6 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Regulated phosphorylation of the Gal4p inhibitor Gal80p of Kluyveromyces lactis revealed by mutational analysis.
SO Biological Chemistry, (April, 1999) Vol. 380, No. 4, pp. 419-430. print.
ISSN: 1431-6730.
AU Zenke, Frank T.; Kapp, Lutz; Breunig, Karin D. [Reprint author]
AN 1999:356277 BIOSIS

L62 ANSWER 7 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1999254167 ESBIOBASE
TI Over-expression and characterization of copper/zinc-superoxide dismutase from rice in Escherichia coli
AU Pan S.-M.; Hwang G.-B.; Liu H.-C.
CS S.-M. Pan, Department of Botany, National Taiwan University, Taipei, Taiwan.
E-mail: pan@ccms.ntu.edu.tw
SO Botanical Bulletin of Academia Sinica, (1999), 40/4 (275-281), 38 reference(s)
CODEN: BBASA6 ISSN: 0006-8063
DT Journal; Article
CY Taiwan, Province of China

LA English
SL English; Chinese

L62 ANSWER 8 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Monitoring of adsorbate breakthrough curves within an expanded bed adsorption column.
SO Journal of Chemical Technology and Biotechnology, (March, 1999) Vol. 74, No. 3, pp. 264-269. print.
CODEN: JCTBED. ISSN: 0268-2575.
AU Bruce, Lynda J.; Clemmitt, Robert H.; Nash, Dominic C.; Chase, Howard A. [Reprint author]
AN 1999:208276 BIOSIS

L62 ANSWER 9 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Evaluation of the hrpN gene for increasing resistance to fire blight in transgenic apple
SO Acta Horticulturae (1999), 489(Eighth International Workshop on Fire Blight, 1998), 247-250
CODEN: AHORA2; ISSN: 0567-7572
AU Abdul-Kader, A. M.; Norelli, J. L.; Aldwinckle, H. S.; Bauer, D. W.; Beer, S. V.
AN 1999:775103 HCAPLUS
DN 132:274940

L62 ANSWER 10 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1999198043 ESBIOBASE
TI Characterization of recombinant corn **glutathione S-transferase** isoforms I, II, III, and IV
AU Sommer A.; Boger P.
CS A. Sommer, Lehrstuhl fur Physiologie, Biochemie der Pflanzen, Universitat Konstanz, D-78457 Konstanz, Germany.
SO Pesticide Biochemistry and Physiology, (1999), 63/3 (127-138), 41 reference(s)
CODEN: PCBPBS ISSN: 0048-3575
DT Journal; Article
CY United States
LA English
SL English

L62 ANSWER 11 OF 49 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 1
TI Expression of a novel ethylene-producing bifunctional fusion enzyme in yeast
SO BOTANICAL BULLETIN OF ACADEMIA SINICA, (APR 1999) Vol. 40, No. 2, pp. 107-114.
Publisher: ACAD SINICA INST BOTANY, NANKANG, TAIPEI 11529, TAIWAN.
ISSN: 0006-8063.
AU Lu B W; Yu B; Li N (Reprint)
AN 1999:373565 SCISEARCH

L62 ANSWER 12 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI The bromodomain of Gcn5p interacts in vitro with specific residues in the N terminus of histone H4.
SO Journal of Molecular Biology, (March 19, 1999) Vol. 287, No. 1, pp. 1-7. print.
CODEN: JMOBAK. ISSN: 0022-2836.
AU Ornaghi, Prisca; Ballario, Paola; Lena, Anna Maria; Gonzalez, Alicia; Filetici, Patrizia [Reprint author]
AN 1999:203337 BIOSIS

L62 ANSWER 13 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN

TI Increasing levels of foreign gene expression in **plants** using introns 1-2 and/or chloroplast transit peptide-encoding exons of the PAT1 gene
SO PCT Int. Appl., 86 pp.
CODEN: PIXXD2
IN Rose, Alan B.; Last, Robert L.
AN 1998:221120 HCAPLUS
DN 128:291135

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9814604	A1	19980409	WO 1997-US18024	19971002
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5861277	A	19990119	US 1996-723624	19961002
AU 9748952	A1	19980424	AU 1997-48952	19971002

L62 ANSWER 14 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1998049346 ESBIOBASE
TI MP2C, a **plant** protein phosphatase 2C, functions as a negative regulator of mitogen-activated protein kinase pathways in yeast and **plants**
AU Meskiene I.; Bogre L.; Glaser W.; Balog J.; Brandstotter M.; Zwerger K.; Ammerer G.; Hirt H.
CS H. Hirt, Inst. of Microbiology and Genetics, Vienna Biocenter, Dr. Bohrgasse 9, A-1030 Vienna, Austria.
E-mail: HEHI@GEM.UNIVIE.AC.AT
SO Proceedings of the National Academy of Sciences of the United States of America, (17 FEB 1998), 95/4 (1938-1943), 29 reference(s)
CODEN: PNASA6 ISSN: 0027-8424
DT Journal; Article
CY United States
LA English
SL English

L62 ANSWER 15 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1998244972 ESBIOBASE
TI Cloning, recombinant expression and characterization of wild type-105-Trp-calmodulin of the green alga Mougeotia scalaris
AU Zorb Chr.; Brunner K.D.; Perbandt M.; Betzel Chr.; Wagner G.
CS Chr. Zorb, Membran- und Bewegungsphysiologie, Fachbereich Biologie - Botanik, Justus-Liebig-Universitat, Senckenbergstrasse 17, D-35 390 Giessen, Germany.
E-mail: Christian.Zoerb@bot1.bio.uni-giessen.de
SO Botanica Acta, (1998), 111/5 (346-353), 59 reference(s)
CODEN: BOACEJ ISSN: 0932-8629
DT Journal; Article
CY Germany, Federal Republic of
LA English
SL English

L62 ANSWER 16 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1998180660 ESBIOBASE
TI Expression of sunflower homeodomain containing proteins in Escherichia coli: Purification and functional studies
AU Palena C.M.; Gonzalez D.H.; Guelman S.A.; Chan R.L.

CS R.L. Chan, Area Biologia Molecular, Fac. de Cie. Bioquim. Farmaceuticas, Prog. Multidisciplinario Biol. Exp., Suipacha 531, 2000 Rosario, Argentina.
E-mail: chan@unrobi.edu.ar
SO Protein Expression and Purification, (1998), 13/1 (97-103), 30 reference(s)
CODEN: PEXPEJ ISSN: 1046-5928
DT Journal; Article
CY United States
LA English
SL English

L62 ANSWER 17 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Method for controlling seed germination using soybean acyl CoA oxidase gene sequences
SO PCT Int. Appl., 90 pp.
CODEN: PIXXD2
IN Agarwal, Ametta Kishore; Brown, Sherri Marie; Qi, Youlin
AN 1997:776268 HCAPLUS
DN 128:58322

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9744465	A1	19971127	WO 1997-US8732	19970520
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9731394	A1	19971209	AU 1997-31394	19970520

L62 ANSWER 18 OF 49 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
TI Construction and characterization of Escherichia coli genetically **engineered** for bioremediation of Hg2+-contaminated environments; bacterium transformation with plasmid pGEX-2T, pGYMT, pGRYMT, pGHMT or pGPMT3 for mercury heavy metal recovery
SO Appl.Environ.Microbiol.; (1997) 63, 6, 2442-45
CODEN: AEMIDF ISSN: 0099-2240
AU Chen S; *Wilson D B
AN 1997-07730 BIOTECHDS

L62 ANSWER 19 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Construction and characterization of Escherichia coli genetically **engineered** for bioremediation of Hg-2+-contaminated environments.
SO Applied and Environmental Microbiology, (1997) Vol. 63, No. 61, pp. 2442-2445.
CODEN: AEMIDF. ISSN: 0099-2240.
AU Chen, Shaolin; Wilson, David B. [Reprint author]
AN 1997:294639 BIOSIS

L62 ANSWER 20 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 2
TI Overexpression of **glutathione S-transferase** /glutathione peroxidase enhances the growth of transgenic tobacco seedlings during stress.
SO Nature Biotechnology, (Oct., 1997) Vol. 15, No. 10, pp. 988-991. print.
ISSN: 1087-0156.
AU Roxas, Virginia P.; Smith, Roger K., Jr.; Allen, Eric R.; Allen, Randy D. [Reprint author]
AN 1998:93687 BIOSIS

L62 ANSWER 21 OF 49 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 3
TI **Engineering** stress tolerance in transgenic **plants**
SO ACTA PHYSIOLOGIAE PLANTARUM, (JUL-AUG 1997) Vol. 19, No. 4, pp. 591-594. Publisher: WARSAW AGRICULTURAL UNIV, DEPT PLANT PHYSIOLOGY, RAKOWIECKA 26/30, 02-528 WARSAW, POLAND.
ISSN: 0137-5881.
AU Roxas V P (Reprint); Wang J; Lodhi S; Allen R D
AN 1998:160402 SCISEARCH

L62 ANSWER 22 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1997147773 ESBIOBASE
TI Soluble overexpression in Escherichia coli, and purification and characterization of wild-type recombinant tobacco acetolactate synthase
AU Chang S.-I.; Kang M.-K.; Choi J.-D.; Namgoong S.K.
CS S.-I. Chang, Department of Biochemistry, Chungbuk National University, Cheongju 361-763, South Korea.
E-mail: sichang@cbucc.chungbuk.ac.kr
SO Biochemical and Biophysical Research Communications, (1997), 234/3 (549-553), 35 reference(s)
CODEN: BBRCA0 ISSN: 0006-291X
DT Journal; Article
CY United States
LA English
SL English

L62 ANSWER 23 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1997163181 ESBIOBASE
TI Expression, purification and characterization of GDP-D-mannose 4,6-dehydratase from Escherichia coli
AU Sturla L.; Bisso A.; Zanardi D.; Benatti U.; De Flora A.; Tonetti M.
CS M. Tonetti, Institute of Biochemistry, University of Genova, Viale Bendetto XV, 1, 16132 Genova, Italy.
E-mail: toninodf@uniqe.it
SO FEBS Letters, (1997), 412/1 (126-130), 27 reference(s)
CODEN: FEBLAL ISSN: 0014-5793
PUI S001457939700762X
DT Journal; Article
CY Netherlands
LA English
SL English

L62 ANSWER 24 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Expression of catalytically active barley glutamyl tRNA-Glu reductase in Escherichia coli as a fusion protein with **glutathione S -transferase.**
SO Proceedings of the National Academy of Sciences of the United States of America, (1996) Vol. 93, No. 17, pp. 9287-9291.
CODEN: PNASA6. ISSN: 0027-8424.
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AN 1996:436506 BIOSIS

L62 ANSWER 25 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1996070845 ESBIOBASE
TI RNA-binding activities of barley stripe mosaic virus γb fusion proteins
AU Donald R.G.K.; Jackson A.O.
CS A.O. Jackson, Department of Plant Biology, University of California, Berkeley, CA 94720, United States.

SO Journal of General Virology, (1996), 77/5 (879-888)
CODEN: JGVIAY ISSN: 0022-1317
DT Journal; Article
CY United Kingdom
LA English
SL English

L62 ANSWER 26 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Protein **engineering** studies of dichloromethane dehalogenase/ **glutathione S-transferase** from Methylophilus sp. strain DM11: Ser12 but not Tyr6 is required for enzyme activity.
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CODEN: EJBCAI. ISSN: 0014-2956.
AU Vuilleumier, Stephane [Reprint author]; Leisinger, Thomas
AN 1996:385690 BIOSIS

L62 ANSWER 27 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1996037918 ESBIOBASE
TI Expression of Zm13, a pollen specific maize protein, in Escherichia coli reveals IgE-binding capacity and allergenic potential
AU Heiss S.; Flicker S.; Hamilton D.A.; Kraft D.; Mascarenhas J.P.; Valenta R.
CS R. Valenta, Inst. of General and Exp. Pathology, AKH, University of Vienna, Wahringer Gurtel 18-20, A-1090 Vienna, Austria.
SO FEBS Letters, (1996), 381/3 (217-221)
CODEN: FEBLAL ISSN: 0014-5793
DT Journal; Article
CY Netherlands
LA English
SL English

L62 ANSWER 28 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI A novel yeast protein showing specific association with the cyclin-dependent kinase 5.
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CODEN: FEBLAL. ISSN: 0014-5793.
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AN 1996:75174 BIOSIS

L62 ANSWER 29 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1996029937 ESBIOBASE
TI Co-purification from Escherichia coli of a **plant** β-glucosidase- **glutathione S-transferase** fusion protein and the bacterial chaperonin GroEL
AU Keresztessy Z.; Hughes J.; Kiss L.; Hughes M.A.
CS M.A. Hughes, Department Biochemistry and Genetics, University of Newcastle upon Tyne, Newcastle upon Tyne NE2 4HH, United Kingdom.
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CODEN: BIJOAK ISSN: 0264-6021
DT Journal; Article
CY United Kingdom
LA English
SL English

L62 ANSWER 30 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Nucleotide sequence of soybean stearoyl-[acyl carrier protein] desaturase gene and genetic **engineering** of stearic acid content in **plant** oils
SO U.S., 25 pp. Cont.-in-part of U.S. Ser. No. 529,049, abandoned.
CODEN: USXXAM

IN Hitz, William D.; Yadav, Narendra S.; Perez-Grau, Luis
AN 1995:810914 HCAPLUS
DN 123:248579

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 5443974	A	19950822	US 1992-995657	19921211
US 5760206	A	19980602	US 1995-474587	19950607

L62 ANSWER 31 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1995127744 ESBIOBASE
TI The precursor of pea ferredoxin-NADP.sup.+ reductase synthesized in Escherichia coli contains bound FAD and is transported into chloroplasts
AU Serra E.C.; Krapp A.R.; Ottado J.; Feldman M.F.; Ceccarelli E.A.; Carrillo N.
CS N. Carrillo, Molecular Biology Section, Departamento de Ciencias Biologicas, Universidad Nacional de Rosario, Suipacha 531, Rosario 2000, Argentina.
SO Journal of Biological Chemistry, (1995), 270/34 (19930-19935)
CODEN: JBCHA3 ISSN: 0021-9258
DT Journal; Article
CY United States
LA English
SL English

L62 ANSWER 32 OF 49 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
TI Forced evolution of **glutathione-S-transferase** to create a more efficient drug detoxification enzyme; enzyme **engineering** and potential gene therapy
SO Proc.Natl.Acad.Sci.U.S.A.; (1995) 92, 18, 8140-44
CODEN: PNASA6 ISSN: 0027-8424
AU Gulick A M; *Fahl W E
AN 1995-13238 BIOTECHDS

L62 ANSWER 33 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Secretion and affinity purification of **glutathione S-transferase** fusion proteins from yeast.
SO Biotechnology Techniques, (1995) Vol. 9, No. 11, pp. 821-826.
CODEN: BTECE6. ISSN: 0951-208X.
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L62 ANSWER 34 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Studies on Vitamin B-6- and Glutathione-Related Microbial Enzymes.
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CODEN: BTMNA7. ISSN: 0006-386X.
AU Kumagai, Hidehiko
AN 1995:452372 BIOSIS

L62 ANSWER 35 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Production of a phosphorylated **GST**:: HPV-6 E7 fusion protein using a yeast expression vector and **glutathione S-transferase** fusions.
SO Gene (Amsterdam), (1995) Vol. 152, No. 1, pp. 137-138.
CODEN: GENED6. ISSN: 0378-1119.
AU Romanos, Michael A. [Reprint author]; Hughes, Fiona J.; Comerford, Sarah A.; Scorer, Carol A.
AN 1995:124351 BIOSIS

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TI A **glutathione S-transferase** fusion protein with the starch-binding domain of Aspergillus glucoamylase.
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Publisher: New York Academy of Sciences, 2 East 63rd Street, New York, New York 10021, USA. Series: Annals of the New York Academy of Sciences.
Meeting Info.: Conference. Palm Coast, Florida, USA. January 31-February 5, 1993.
CODEN: ANYAA9. ISSN: 0077-8923. ISBN: 0-89766-822-7 (paper), 0-89766-821-9 (cloth).
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AN 1994:418637 BIOSIS

L62 ANSWER 37 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Large-scale production and characterization of recombinant human immunodeficiency virus type 1 Nef.
SO Journal of General Virology, (1994) Vol. 75, No. 3, pp. 651-655.
CODEN: JGVIAY. ISSN: 0022-1317.
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AN 1994:187661 BIOSIS

L62 ANSWER 38 OF 49 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Functional expression of Arabidopsis thaliana anthranilate synthase subunit I in Escherichia coli
SO Plant Physiology (1994), 106(1), 353-8
CODEN: PLPHAY; ISSN: 0032-0889
AU Bernasconi, Paul; Walters, Eric W.; Woodworth, Alison R.; Siehl, Daniel L.; Stone, Tracey E.; Subramanian, Mani V.
AN 1994:600562 HCAPLUS
DN 121:200562

L62 ANSWER 39 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
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AN 1994:210973 BIOSIS

L62 ANSWER 40 OF 49 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
AN 1994110791 ESBIOBASE
TI In vitro mutation analysis of Arabidopsis thaliana small GTP-binding proteins and detection of GAP-like activities in **plant** cells
AU Anai T.; Matsui M.; Nomura N.; Ishizaki R.; Uchimiya H.
CS H. Uchimiya, Institute Molecular/Cell Biosciences, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.
SO FEBS Letters, (1994), 346/2-3 (175-180)
CODEN: FEBLAL ISSN: 0014-5793
DT Journal; Article
CY Netherlands
LA English
SL English

L62 ANSWER 41 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Production of oryzacystatins I and II in Escherichia coli using the **glutathione S-transferase** gene fusion system.

SO Biotechnology Progress, (1994) Vol. 10, No. 2, pp. 155-159.
CODEN: BIPRET. ISSN: 8756-7938.
AU Michaud, Dominique; Binh Nguyen-Quoc; Yelle, Serge [Reprint author]
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L62 ANSWER 44 OF 49 MEDLINE on STN DUPLICATE 5
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Journal code: 0077340. ISSN: 0022-1317.
AU Brantley J D; Hunt A G
AN 93286570 MEDLINE

L62 ANSWER 45 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 6
TI One-step purification of **plant** ferredoxin-NADP+ oxidoreductase expressed in Escherichia coli as fusion with **glutathione S-transferase.**
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CODEN: PEXPEJ. ISSN: 1046-5928.
AU Serra, Esteban C.; Carrillo, Nestor; Krapp, Adriana R.; Ceccarelli, Eduardo A. [Reprint author]
AN 1994:67847 BIOSIS

L62 ANSWER 46 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI GENETICALLY **ENGINEERED PLANTS** FOR HERBICIDE RESISTANCE.
SO Biotechnol. Agric. Ser., (1992) pp. 75-107. GATEHOUSE, A. M. R., V. A. HILDER AND D. BOULTER (ED.). BIOTECHNOLOGY IN AGRICULTURE, NO. 7. PLANT GENETIC MANIPULATION FOR CROP PROTECTION. XIII+266P. C.A.B. INTERNATIONAL: WALLINGFORD, ENGLAND, UK; TUCSON, ARIZONA, USA. ILLUS.
Publisher: Series: Biotechnology in Agriculture Series.
CODEN: BIAGEN. ISSN: 0960-202X. ISBN: 0-85198-707-9.
AU MULLINEAUX P M [Reprint author]
AN 1992:419952 BIOSIS

L62 ANSWER 47 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI MULTIPLE ENZYMATIC PATHWAYS INVOLVED IN THE METABOLISM OF GLYCERYL TRINITRATE IN PHANEROCHAETE-CHRYSOSPORIUM.
SO Biotechnology and Applied Biochemistry, (1992) Vol. 15, No. 3, pp. 257-266.
CODEN: BABIEC. ISSN: 0885-4513.

AU SERVENT D [Reprint author]; DUCROCQ C; HENRY Y; SERVY C; LENFANT M
AN 1992:346481 BIOSIS

L62 ANSWER 48 OF 49 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI TOTAL CHEMICAL SYNTHESIS AND EXPRESSION IN ESCHERICHIA-COLI OF A MAIZE GLUTATHIONE TRANSFERASE **GST** GENE.
SO Gene (Amsterdam), (1989) Vol. 76, No. 1, pp. 153-160.
CODEN: GENED6. ISSN: 0378-1119.
AU WOSNICK M A [Reprint author]; BARNETT R W; CARLSON J E
AN 1989:268026 BIOSIS

L62 ANSWER 49 OF 49 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
TI Structural analysis of a maize gene coding for **glutathione-S-transferase** involved in herbicide detoxification; cloning and DNA sequence
SO Plant Mol.Biol.; (1986) 6, 4, 203-11
CODEN: PMBIDB
AU Shah D M; Hironaka C M; Wiegand R C; Harding E I; Krivi G G; Tiemeier C
AN 1986-05927 BIOTECHDS

=> d ab 21,32

L62 ANSWER 21 OF 49 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 3
AB Research in our laboratory has focused on the analysis of the functions of a variety of enzymes that are involved in the scavenging of reactive oxygen intermediates (ROI) such as superoxide radicals (O-.(2)-) and hydrogen peroxide (H2O2). Recent work has been on transgenic **plants** that over-express **glutathione S-transferases** (**GST**) that also have glutathione peroxidase activity. Transgenic tobacco **plants** that contain gene constructs that encode two different tobacco GSTs had elevated levels of both **GST** and GPX activity. Analysis. of mature vegetative transgenic tobacco **plants** that over-express **GST**/GPX failed to show any increase in paraquat tolerance or protection from photooxidative stress. However, seeds of these **GST**/GPX-expressing tobacco lines are capable of more rapid germination and seedling growth at low temperatures and at elevated salt concentrations. Reduced levels of lipid peroxidation were noted in **GST**/GPX-expressing seedling compared to control seedlings under both stressful and non-stressful conditions. In addition, **GST**/GPX-expressing seedlings significantly accumulated more oxidized glutathione (GSSG) than control seedlings during stress. These characteristics clearly indicate that over-expression of **GST** /GPX in transgenic seedlings can have substantial effects on their stress tolerance. Furthermore, it appears that this effect is due primarily to the elevated levels of GPX activity.

L62 ANSWER 32 OF 49 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AB Glutathione-transferase (**GST**, EC-2.5.1.18) in mammalian cells catalyzes the conjugation and detoxication of structurally diverse electrophilic environmental carcinogens and alkylating drugs, e.g. the antineoplastic nitrogen mustards. Structural alteration of the nonspecific electrophile-binding site (EBS) may produce recombinant enzymes with increased efficiency for detoxication of a single drug. These mutants could be useful somatic transgenes to protect healthy human cells against single alkylating agents in cancer chemotherapy. Random mutagenesis of residues 9-14, 102-112 and 210-220 from the **GST** EBS and selection of Escherichia coli expressing the enzyme library with mechlorethamine (20-500 uM) gave mutant enzyme with increased catalytic efficiency for merchlorethamine conjugation (up to 15-fold increase in kcat and up to 6-fold increase in kcat/Km) and conferring up to 31-fold resistance (9-fold greater drug-resistance than that conferred by the

wild-type **GST**). The method is useful for modification of drug- and carcinogen-metabolizing enzymes to achieve desired resistance in both prokaryotic and eukaryotic **plant** and animal cells. (38 ref)

```
=> s l12 and herbicide#
FILE 'MEDLINE'
          9782 HERBICIDE#
L63        103 L1 AND HERBICIDE#

FILE 'SCISEARCH'
         23835 HERBICIDE#
L64        248 L2 AND HERBICIDE#

FILE 'LIFESCI'
          6075 HERBICIDE#
L65         70 L3 AND HERBICIDE#

FILE 'BIOTECHDS'
          5341 HERBICIDE#
L66         44 L4 AND HERBICIDE#

FILE 'BIOSIS'
         48036 HERBICIDE#
L67        330 L5 AND HERBICIDE#

FILE 'EMBASE'
          9336 HERBICIDE#
L68         74 L6 AND HERBICIDE#

FILE 'HCAPLUS'
         80562 HERBICIDE#
L69        373 L7 AND HERBICIDE#

FILE 'NTIS'
          3734 HERBICIDE#
L70          0 L8 AND HERBICIDE#

FILE 'ESBIOBASE'
          7623 HERBICIDE#
L71        119 L9 AND HERBICIDE#

FILE 'BIOTECHNO'
          3463 HERBICIDE#
L72         72 L10 AND HERBICIDE#

FILE 'WPIDS'
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L73         40 L11 AND HERBICIDE#

TOTAL FOR ALL FILES
L74       1473 L12 AND HERBICIDE#

=> s l74 not 2000-2005/py
FILE 'MEDLINE'
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L75         63 L63 NOT 2000-2005/PY

FILE 'SCISEARCH'
       5097493 2000-2005/PY
L76        173 L64 NOT 2000-2005/PY

FILE 'LIFESCI'
        512467 2000-2005/PY
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L77         49 L65 NOT 2000-2005/PY

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        105642 2000-2005/PY
L78         21 L66 NOT 2000-2005/PY

FILE 'BIOSIS'
       2625073 2000-2005/PY
L79        241 L67 NOT 2000-2005/PY

FILE 'EMBASE'
       2367945 2000-2005/PY
L80         52 L68 NOT 2000-2005/PY

FILE 'HCAPLUS'
       5123281 2000-2005/PY
L81        243 L69 NOT 2000-2005/PY

FILE 'NTIS'
         80220 2000-2005/PY
L82          0 L70 NOT 2000-2005/PY

FILE 'ESBIOBASE'
       1468247 2000-2005/PY
L83         67 L71 NOT 2000-2005/PY

FILE 'BIOTECHNO'
        491187 2000-2005/PY
L84         46 L72 NOT 2000-2005/PY

FILE 'WPIDS'
       4509723 2000-2005/PY
L85          4 L73 NOT 2000-2005/PY

TOTAL FOR ALL FILES
L86        959 L74 NOT 2000-2005/PY

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FILE 'MEDLINE'
        467539 MUTA?
        371663 MODIF?
        101629 VARIANT#
L87          5 L75 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'SCISEARCH'
        447924 MUTA?
        491421 MODIF?
        109923 VARIANT#
L88         14 L76 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'LIFESCI'
        207369 MUTA?
         93911 MODIF?
         34346 VARIANT#
L89          2 L77 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'BIOTECHDS'
         40667 MUTA?
         33496 MODIF?
         13488 VARIANT#
L90          4 L78 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'BIOSIS'
        509889 MUTA?
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        368948 MODIF?
        104432 VARIANT#
L91         12 L79 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'EMBASE'
        387991 MUTA?
        332451 MODIF?
         88523 VARIANT#
L92          4 L80 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'HCAPLUS'
        477584 MUTA?
        899200 MODIF?
         99930 VARIANT#
L93         17 L81 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'NTIS'
          9780 MUTA?
         96451 MODIF?
          4523 VARIANT#
L94          0 L82 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'ESBIOBASE'
        231679 MUTA?
        141472 MODIF?
         40395 VARIANT#
L95          5 L83 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'BIOTECHNO'
        242571 MUTA?
         86734 MODIF?
         41198 VARIANT#
L96          4 L84 AND (MUTA? OR MODIF? OR VARIANT#)

FILE 'WPIDS'
         26386 MUTA?
        263718 MODIF?
         25074 VARIANT#
L97          1 L85 AND (MUTA? OR MODIF? OR VARIANT#)

TOTAL FOR ALL FILES
L98         68 L86 AND (MUTA? OR MODIF? OR VARIANT#)

=> dup rem l98
PROCESSING COMPLETED FOR L98
L99          32 DUP REM L98 (36 DUPLICATES REMOVED)

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L99  ANSWER 1 OF 32  HCAPLUS  COPYRIGHT 2005 ACS on STN
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     catalyzed by an isoenzyme of glutathione S-
     transferase
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     CODEN: 67QRAI
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L99 ANSWER 3 OF 32 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 2
TI Effects of the agrochemicals butachlor, pretilachlor and isoprothiolane on rat liver xenobiotic-metabolizing enzymes.
SO Xenobiotica, (1998) 28/11 (1029-1039).
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AU Ishizuka M.; Iwata H.; Kazusaka A.; Hatakeyama S.; Fujita S.
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L99 ANSWER 4 OF 32 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN
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SO MOLECULAR & GENERAL GENETICS, (JUN 1998) Vol. 258, No. 6, pp. 655-662.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 0026-8925.
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L99 ANSWER 5 OF 32 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 3
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SO JOURNAL OF BIOCHEMISTRY AND MOLECULAR BIOLOGY, (31 MAY 1998) Vol. 31, No. 3, pp. 287-295.
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ISSN: 1225-8687.
AU Kil M W; Chang S I (Reprint)
AN 1998:458646 SCISEARCH

L99 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
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L99 ANSWER 9 OF 32 Elsevier BIOBASE COPYRIGHT 2005 Elsevier Science B.V. on STN
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TI Soluble overexpression in Escherichia coli, and purification and characterization of wild-type recombinant tobacco acetolactate synthase
AU Chang S.-I.; Kang M.-K.; Choi J.-D.; Namgoong S.K.
CS S.-I. Chang, Department of Biochemistry, Chungbuk National University, Cheongju 361-763, South Korea.
E-mail: sichang@cbucc.chungbuk.ac.kr
SO Biochemical and Biophysical Research Communications, (1997), 234/3 (549-553), 35 reference(s)
CODEN: BBRCA0 ISSN: 0006-291X
DT Journal; Article
CY United States
LA English
SL English

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SO Jpn. Kokai Tokkyo Koho, 34 pp.
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	JP 2511036	B2	19960626		
	CH 689454	A	19990430	CH 1987-1874	19870515
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	R: AT, BE, DE, ES, FR, GB, GR, IT, LU, NL, SE				
	DD 273855	A5	19891129	DD 1987-302873	19870518
	DD 279269	A5	19900530	DD 1987-326337	19870518
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L99 ANSWER 30 OF 32 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
TI **Herbicide** tolerant plants - obtd. by recombinant DNA methods, and comprise genetic sequence coding for **glutathione S -transferase** gene.

PI	AU 8773146	A	19871126 (198803)*	75	
	NO 8702075	A	19871214 (198804)		
	JP 62296882	A	19871224 (198806)		
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	R: AT BE DE ES FR GB GR IT LU NL SE				
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CH 689454 A5 19990430 (199922) C12N015-63
IN CHILTON, M D; DUESING, J; HELMER, G; LAI, H C J; ROTHSTEIN, S; SCARAFIA, L; TU, C P D; CHILTON, M; LAI, H J; TU, C D; HERMER, J; LAI, H; TU, C

L99 ANSWER 31 OF 32 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 13
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AN 1987:424997 BIOSIS

L99 ANSWER 32 OF 32 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 14
TI IMMUNOFLUORESCENCE LOCALIZATION OF CONJUGATED ATRAZINE IN LEAF PIECES OF CORN ZEA-MAYS.
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CODEN: ZPFPAA. ISSN: 0340-8159.
AU HUBER S J [Reprint author]; SAUTTER C
AN 1987:193347 BIOSIS

=>
=> d ab 6,12

L99 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
AB Selected resistance to triazine **herbicides** has occurred in over 50 weed species world wide. The basis of this resistance is almost always a **mutation**(s) in the gene encoding the binding site of triazines in Photosystem II (D1 protein) of the photosynthetic electron transport chain. However, velvetleaf (Abutilon theophrasti Medic.) biotypes from one location in Maryland (MRB) and at least two locations in Wisconsin (WRB1, WRA1) are resistant to atrazine due to enhanced detoxification of the **herbicide**, rather than decreased binding to D1 protein. Compared to seedlings of a Wisconsin atrazine-susceptible biotype (WSA1), seedlings of MRB and WRB1 exposed hydroponically to 14C-atrazine metabolized the **herbicide** more rapidly to the glutathione conjugate of atrazine (GS-atrazine) and its further catabolites. In vitro, GSTatr's isolated from stems and leaves of the resistant biotypes had higher activity than those from the susceptible biotype. Thus, elevated rates of atrazine detoxification catalyzed by a GSTatr isoenzyme(s) appear to be responsible for triazine resistance in the velvetleaf biotypes. The mol. mechanism of the resistance is under investigation.

L99 ANSWER 12 OF 32 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 5
AB Multiple isoenzymes of glutathione transferase (**GST**), purified from the shoots of wheat seedlings treated with the **herbicide** safener fenchlorazole-ethyl, could be resolved into polar and hydrophobic types using hydrophobic interaction chromatography. Both types of GSTs could also be resolved based on their affinities for S-hexyl-glutathione-agarose. A minor proportion of the GSTs could be eluted from the column with a salt wash and this loosely bound fraction contained polypeptides which were recognized by an antiserum raised against the theta-type maize **GST** ZmGST I-II. The major proportion could only be recovered using S-hexyl-glutathione and these GSTs were characterized in detail. These isoenzymes catalyzed the glutathione conjugation of xenobiotics, including **herbicides**,

and showed additional activities as glutathione peroxidases. Each **GST** was composed of two subunits, with four distinct classes of subunit being determined. A 25-kDa polypeptide, termed Triticum aestivum **GST** 1 (TaGST 1), was the most abundant subunit and could be resolved into two **variants**, TaGST 1a and TaGST Ib by reversed-phase HPLC. This **GST** subunit was recognised by an antiserum raised against the maize **GST** ZmGST V-VI, which is a tau-type **GST.** In addition to TaGST 1, two 26-kDa polypeptides, TaGST 2 and TaGST 3, and a 24-kDa polypeptide, TaGST 4, could be resolved by a combination of hydrophobic interaction chromatography, SDS-PAGE, and reversed-phase HPLC. In the shoots of untreated wheat seedlings the major isoenzyme was TaGST 1a-1b, while in the shoots of fenchlorazole-ethyl-treated plants the heterodimers TaGST 1-2, TaGST 1-3, and TaGST 1-4 also accumulated. Significantly, only the safener-inducible TaGST 1-2, TaGST 1-3, and TaGST 1-4 isoenzymes catalyzed the detoxification of fenoxaprop-ethyl and this may help to explain why fenchlorazole-ethyl enhances the glutathione-mediated metabolism and also the tolerance of wheat toward this **herbicide.** All isoenzymes were active in detoxifying the **herbicides** metolachlor and fluorodifen, bur only TaGST 1-2 and TaGST 1-3 showed any activity toward atrazine. (C) 1997 Academic Press.

=> d ab 19,22,30

L99 ANSWER 19 OF 32 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AB Glutathione-transferase (**GST**, EC-2.5.1.18) activity was determined in rhizosphere bacteria with the substrate 1-chloro-2,4-dinitrobenzene (CDNB) and in 18 strains with the **herbicide** alachlor. Initial alachlor-**GST** activity was assessed with (U-ring-14C)alachlor in a phase partitioning assay **modified** from an atrazine-**GST** assay with hexane in place of methylene chloride and at a final alachlor concentration of 550 ul. Highest CDNB-**GST** activity (60-222 nmol/hr.mg) were in Enterobacter cloacae, Citrobacter diversus, Klebsiella planticola, Pseudomonas cepacia, Pseudomonas fluorescens, Pseudomonas putida and Xanthomonas campestris. There was very low CDNB-**GST** activity in Gram-positive strains. Alachlor-**GST** activity detected in cell extracts and whole-cell suspensions of some strains of Enterobacteriaceae and Pseudomoneae was 50- to 100-fold lower than CDNB-**GST** activity (0.5-2.5 nmol/hr.mg). Therefore, rhizosphere bacteria, especially fluorescent pseudomónads, may play an important role in alachlor pesticide degradation via **GST**-mediated reactions. (34 ref)

L99 ANSWER 22 OF 32 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 9
AB Setaria is a grass genus of about 125 species that includes both food crops and a number of important agricultural weeds. Setaria viridis, S. faberii, S. glauca, and S. geniculata are major agricultural weeds worldwide and in North America. There is currently an inadequate knowledge of inter- and intraspecific **herbicide**-resistance variation in these foxtail species despite the importance of this knowledge to understanding evolution of **herbicide** resistance and improving weed management. Previous isozyme analyses of these species indicate that significant variation in genetic diversity exists among foxtail populations. It is unknown whether this genetic diversity is correlated with variability in important adaptive traits such as **herbicide** resistance. Studies were conducted to determine if inter- and intraspecific differences in atrazine and metolachlor resistance exist in foxtail species. Three assays were utilized to make these determinations: whole plant dose response, in vivo leaf chlorophyll fluorescence, and **glutathione S-transferase** (**GST**) conjugation assays. Significant variations in atrazine and metolachlor

resistance were revealed within and among foxtail species. Green and giant foxtail were more resistant to atrazine than was yellow foxtail. Although green and giant foxtail again had a similar level of resistance, yellow foxtail was the most resistant species to metolachlor. These results indicated that the resistance mechanisms (quantitative or qualitative) to these two **herbicides** may be different in yellow, green, and giant foxtail. Intraspecific differences in atrazine resistance were found within both green foxtail populations and with yellow foxtail populations. Intraspecific metolachlor resistance differences were detected among green foxtail populations, but not in other foxtail species. No evidence for population shifts to more resistant foxtail **variants** with prolonged atrazine exposure was found in several detailed studies. When populations from several farms with a long history of atrazine use were compared, no differences in atrazine resistance were detected among populations from treated areas and adjacent untreated areas. Chlorophyll fluorescence assays indicated a similar pattern of atrazine resistant among foxtail populations, although it was less sensitive in detecting differences than the whole plant assay. No differences in **GST** -mediated atrazine or metolachlor conjugation were detected within or between foxtail species. These results may indicate that **GST** -mediated glutathione-**herbicide** conjugation may not be the primary detoxification mechanism for these **herbicides** in these foxtail species. Alternatively, these results may be a reflection of mitigating factors, such as differences at the target site, or in fitness related to growth rate at critical growth stages, among the populations. Several foxtail species had significant inter- and intraspecific differences in **GST**-mediated 1-chloro-2,4-dinitrobenzene conjugation activity. In some instances these responses were similar to those observed in the whole plant responses to metolachlor, although the significance of these similarities was not clear. (C) 1995 Academic Press, Inc.

L99 ANSWER 30 OF 32 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
AB AU 8773146 A UPAB: 19990316
Recombinant DNA molecule conferring **herbicide** tolerance to plants by detoxifying the **herbicides** is new.

Recombinant DNA molecule comprising a genetic sequence coding for a **glutathione S-transferase** (**GST**) polypeptide is new. It may be linked to a plant promoter.

DNA transfer or expression vector comprising a recombinant DNA molecule as defined above is new.

Host cell comprising a DNA transfer or expression vector as defined above is new. The host cell is especially a plant or its seed.

Progency of plants regenerated from the host cell plant, including **mutants** and **variant** progeny, are new.

USE/ADVANTAGE - The recombinant DNA molecule including a **GST** gene on expression in a plant increases the levels of **GST** enzymatic activity. **GST** is involved in the detoxification of xemobiotics. In plants it provided a mechanism for detoxification of the xenobiotic cpd., so that it becomes water-soluble and non-toxic. Plants tolerant to **herbicides** can be developed in this way.
Dwg.0/4

```
=> s l12 and (soy or glycine max)
FILE 'MEDLINE'
          6277 SOY
         41966 GLYCINE
         17701 MAX
          1254 GLYCINE MAX
                 (GLYCINE(W)MAX)
L100        19 L1 AND (SOY OR GLYCINE MAX)
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FILE 'SCISEARCH'
         9749 SOY
        40444 GLYCINE
        62656 MAX
         8501 GLYCINE MAX
                (GLYCINE(W)MAX)
L101       41 L2 AND (SOY OR GLYCINE MAX)

FILE 'LIFESCI'
         1844 SOY
        16196 "GLYCINE"
        16966 "MAX"
         5268 GLYCINE MAX
                ("GLYCINE"(W)"MAX")
L102       13 L3 AND (SOY OR GLYCINE MAX)

FILE 'BIOTECHDS'
          887 SOY
         5950 GLYCINE
         3471 MAX
         2975 GLYCINE MAX
                (GLYCINE(W)MAX)
L103       10 L4 AND (SOY OR GLYCINE MAX)

FILE 'BIOSIS'
        14748 SOY
        65766 GLYCINE
        42542 MAX
        20380 GLYCINE MAX
                (GLYCINE(W)MAX)
L104       50 L5 AND (SOY OR GLYCINE MAX)

FILE 'EMBASE'
         4477 SOY
        38412 "GLYCINE"
        51887 "MAX"
          884 GLYCINE MAX
                ("GLYCINE"(W)"MAX")
L105       15 L6 AND (SOY OR GLYCINE MAX)

FILE 'HCAPLUS'
        18531 SOY
       138391 GLYCINE
       808019 MAX
        19022 GLYCINE MAX
                (GLYCINE(W)MAX)
L106       80 L7 AND (SOY OR GLYCINE MAX)

FILE 'NTIS'
          228 SOY
          695 GLYCINE
         2503 MAX
           79 GLYCINE MAX
                (GLYCINE(W)MAX)
L107        0 L8 AND (SOY OR GLYCINE MAX)

FILE 'ESBIOBASE'
         2561 SOY
        15263 GLYCINE
        16395 MAX
         3745 GLYCINE MAX
                (GLYCINE(W)MAX)
L108       29 L9 AND (SOY OR GLYCINE MAX)
```

```
FILE 'BIOTECHNO'
          1310 SOY
         13489 GLYCINE
         11604 MAX
          1563 GLYCINE MAX
                 (GLYCINE(W)MAX)
L109        14 L10 AND (SOY OR GLYCINE MAX)

FILE 'WPIDS'
         16090 SOY
         11275 GLYCINE
         96298 MAX
           349 GLYCINE MAX
                 (GLYCINE(W)MAX)
L110         9 L11 AND (SOY OR GLYCINE MAX)

TOTAL FOR ALL FILES
L111       280 L12 AND (SOY OR GLYCINE MAX)

=> s l111 not 2000-2005/py
FILE 'MEDLINE'
       2727691 2000-2005/PY
L112         6 L100 NOT 2000-2005/PY

FILE 'SCISEARCH'
       5097493 2000-2005/PY
L113        20 L101 NOT 2000-2005/PY

FILE 'LIFESCI'
        512467 2000-2005/PY
L114         7 L102 NOT 2000-2005/PY

FILE 'BIOTECHDS'
        105642 2000-2005/PY
L115         3 L103 NOT 2000-2005/PY

FILE 'BIOSIS'
       2625073 2000-2005/PY
L116        25 L104 NOT 2000-2005/PY

FILE 'EMBASE'
       2367945 2000-2005/PY
L117         4 L105 NOT 2000-2005/PY

FILE 'HCAPLUS'
       5123281 2000-2005/PY
L118        28 L106 NOT 2000-2005/PY

FILE 'NTIS'
         80220 2000-2005/PY
L119         0 L107 NOT 2000-2005/PY

FILE 'ESBIOBASE'
       1468247 2000-2005/PY
L120        14 L108 NOT 2000-2005/PY

FILE 'BIOTECHNO'
        491187 2000-2005/PY
L121        10 L109 NOT 2000-2005/PY

FILE 'WPIDS'
       4509723 2000-2005/PY
L122         1 L110 NOT 2000-2005/PY
```

TOTAL FOR ALL FILES
L123 118 L111 NOT 2000-2005/PY

=> dup rem l123
PROCESSING COMPLETED FOR L123
L124 43 DUP REM L123 (75 DUPLICATES REMOVED)

=> d tot

L124 ANSWER 1 OF 43 MEDLINE on STN DUPLICATE 1
TI **Soy** induces phase II enzymes but does not inhibit dimethylbenz[a]anthracene-induced carcinogenesis in female rats.
SO Journal of nutrition, (1999 Oct) 129 (10) 1820-6.
Journal code: 0404243. ISSN: 0022-3166.
AU Appelt L C; Reicks M M
AN 1999429911 MEDLINE

L124 ANSWER 2 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 2
TI Early events in the signal pathway for the oxidative burst in soybean cells exposed to avirulent Pseudomonas syringae pv glycinea
SO PLANT PHYSIOLOGY, (AUG 1999) Vol. 120, No. 4, pp. 1137-1146.
Publisher: AMER SOC PLANT PHYSIOLOGISTS, 15501 MONONA DRIVE, ROCKVILLE, MD 20855.
ISSN: 0032-0889.
AU Rajasekhar V K (Reprint); Lamb C; Dixon R A
AN 1999:653627 SCISEARCH

L124 ANSWER 3 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 3
TI Differential gene expression in plants stressed by the peroxidizing herbicide oxyfluorfen
SO ZEITSCHRIFT FUR NATURFORSCHUNG C-A JOURNAL OF BIOSCIENCES, (SEP-OCT 1999) Vol. 54, No. 9-10, pp. 764-770.
Publisher: VERLAG Z NATURFORSCH, POSTFACH 2645, W-7400 TUBINGEN, GERMANY.
ISSN: 0939-5075.
AU Lederer B; Knorzer O C; Boger P (Reprint)
AN 1999:804786 SCISEARCH

L124 ANSWER 4 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI The involvement of cysteine proteases and protease inhibitor genes in the regulation of programmed cell death in plants
SO Plant Cell (1999), 11(3), 431-443
CODEN: PLCEEW; ISSN: 1040-4651
AU Solomon, Mazal; Belenghi, Beatrice; Delledonne, Massimo; Menachem, Ester; Levine, Alex
AN 1999:233219 HCAPLUS
DN 131:29895

L124 ANSWER 5 OF 43 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 4
TI Two soybean glutathione transferases exhibit substrate and thiol specificity.
SO Clinical Chemistry and Enzymology Communications, (1999) 8/4-6 (389-392).
Refs: 3
ISSN: 0892-2187 CODEN: CCECEY
AU Skipsey M.; Andrews C.J.; Townson J.K.; Jepson I.; Edwards R.
AN 2000126082 EMBASE

L124 ANSWER 6 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 5
TI Antioxidative defense activation in soybean cells
SO PHYSIOLOGIA PLANTARUM, (NOV 1999) Vol. 107, No. 3, pp. 294-302.
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COPENHAGEN, DENMARK.
ISSN: 0031-9317.
AU Knorzer O C; Lederer B; Durner J; Boger P (Reprint)
AN 2000:72524 SCISEARCH

L124 ANSWER 7 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Expression of a novel ethylene-producing bifunctional fusion enzyme in yeast
SO Botanical Bulletin of Academia Sinica (1999), 40(2), 107-114
CODEN: BBASA6; ISSN: 0006-8063
AU Lu, Bing Wen; Yu, Bing; Li, Ning
AN 1999:336512 HCAPLUS
DN 131:154150

L124 ANSWER 8 OF 43 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
TI Heterologous expression systems to study **glutathione-S -transferases** involved in herbicide metabolism; glutathione-transferase expression in transgenic plant, bacterium and application in herbicide pesticide degradation (conference abstract)
SO Abstr.Pap.Am.Chem.Soc.; (1999) 218 Meet., Pt.1, AGRO176
CODEN: ACSRAL ISSN: 0065-7727
218th ACS National Meeting, American Chemical Society, New Orleans, LA, USA, 22-26 August, 1999.
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AN 2000-02087 BIOTECHDS

L124 ANSWER 9 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 6
TI Processed soybean foods
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
IN Kanke, Yusuke; Iwama, Akihiko; Iwasaki, Masae; Kaneko, Senri
AN 1998:586018 HCAPLUS
DN 129:202278

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10234326	A2	19980908	JP 1997-41788	19970226

L124 ANSWER 10 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 7
TI Potentiation of the oxidative burst and isoflavonoid phytoalexin accumulation by serine protease inhibitors
SO PLANT PHYSIOLOGY, (DEC 1998) Vol. 118, No. 4, pp. 1487-1494.
Publisher: AMER SOC PLANT PHYSIOLOGISTS, 15501 MONONA DRIVE, ROCKVILLE, MD 20855.
ISSN: 0032-0889.
AU Guo Z J; Lamb C; Dixon R A (Reprint)
AN 1998:950928 SCISEARCH

L124 ANSWER 11 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Efficacy of exogenous GA(3) and herbicide safeners in protection of Zea mays from metolachlor toxicity
SO PLANT PHYSIOLOGY AND BIOCHEMISTRY, (NOV 1998) Vol. 36, No. 11, pp. 809-815.
Publisher: GAUTHIER-VILLARS/EDITIONS ELSEVIER, 23 RUE LINOIS, 75015 PARIS, FRANCE.
ISSN: 0981-9428.
AU Alla M M N (Reprint); Hassan N M
AN 1998:931846 SCISEARCH

L124 ANSWER 12 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Effect of diet and β-naphthoflavone on hepatic and renal **glutathione S-transferase** isoenzymes in carp (Cyprinus carpio)

SO Fish Physiology and Biochemistry (1998), 18(2), 203-212
CODEN: FPBIEP; ISSN: 0920-1742
AU Noble, E.; Barre, H.; Dierickx, P. J.
AN 1999:303163 HCAPLUS
DN 131:73033

L124 ANSWER 13 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 8
TI H2O2 generation and the influence of antioxidants during the 2,3,5-triiodobenzoic acid-mediated induction of **glutathione S-transferase** in soybean
SO PHYTOCHEMISTRY, (SEP 1998) Vol. 49, No. 1, pp. 37-41.
Publisher: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND.
ISSN: 0031-9422.
AU Flury T (Reprint); Kreuz K; Wagner E
AN 1998:706716 SCISEARCH

L124 ANSWER 14 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 9
TI Homoglutathione selectivity by soybean **glutathione S-transferases**
SO PESTICIDE BIOCHEMISTRY AND PHYSIOLOGY, (OCT 1998) Vol. 62, No. 1, pp. 15-25.
Publisher: ACADEMIC PRESS INC JNL-COMP SUBSCRIPTIONS, 525 B ST, STE 1900, SAN DIEGO, CA 92101-4495.
ISSN: 0048-3575.
AU McGonigle B (Reprint); Lau S M C; Jennings L D; OKeefe D P
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L124 ANSWER 15 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Method for controlling seed germination using soybean acyl CoA oxidase gene sequences
SO PCT Int. Appl., 90 pp.
CODEN: PIXXD2
IN Agarwal, Ametta Kishore; Brown, Sherri Marie; Qi, Youlin
AN 1997:776268 HCAPLUS
DN 128:58322

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9744465	A1	19971127	WO 1997-US8732	19970520
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9731394	A1	19971209	AU 1997-31394	19970520

L124 ANSWER 16 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Changes in glutathione transferase activities in soybean in response to treatment with herbicides and safeners
SO Brighton Crop Protection Conference--Weeds (1997), (Vol. 2), 825-830
CODEN: BCPWE2; ISSN: 0955-1514
AU Andrews, C.; Skipsey, M.; Edwards, R.; Hall, G.; Townson, J.; Jepson, I.
AN 1998:35885 HCAPLUS
DN 128:98922

L124 ANSWER 17 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Purification and characterization of glutathione transferase enzymes from soybean seedlings
SO Brighton Crop Protection Conference--Weeds (1997), (Vol. 2), 789-794

CODEN: BCPWE2; ISSN: 0955-1514
AU Skipsey, M.; Andrews, C. J.; Edwards, R.; Townson, J. K.; Jepson, I.
AN 1998:35867 HCAPLUS
DN 128:164220

L124 ANSWER 18 OF 43 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Effect of **soy** on phase II enzymes and lipid peroxidation in premenopausal women.
SO FASEB Journal, (1997) Vol. 11, No. 3, pp. A601.
Meeting Info.: Annual Meeting of the Professional Research Scientists on Experimental Biology 97. New Orleans, Louisiana, USA. April 6-9, 1997.
CODEN: FAJOEC. ISSN: 0892-6638.
AU Appelt, L. C.; Csallany, A. S.; Kurzer, M. S.; Duncan, A.; Merz, B.; Reicks, M.
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L124 ANSWER 19 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 10
TI Substrate and thiol specificity of a stress-inducible glutathione transferase from soybean
SO FEBS LETTERS, (16 JUN 1997) Vol. 409, No. 3, pp. 370-374.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0014-5793.
AU Skipsey M; Andrews C J; Townson J K; Jepson I; Edwards R (Reprint)
AN 97:547436 SCISEARCH

L124 ANSWER 20 OF 43 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI **Soy** isoflavones, genistein and daidzein, do not inhibit fumonisin B-1-promoted rat hepatocarcinogenesis.
SO FASEB Journal, (1997) Vol. 11, No. 3, pp. A368.
Meeting Info.: Annual Meeting of the Professional Research Scientists on Experimental Biology 97. New Orleans, Louisiana, USA. April 6-9, 1997.
CODEN: FAJOEC. ISSN: 0892-6638.
AU Hendrich, S.; Lu, Z.; Dantzer, W.; Song, T.; Murphy, P.
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L124 ANSWER 21 OF 43 MEDLINE on STN DUPLICATE 11
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SO Nutrition and cancer, (1997) 28 (3) 270-5.
Journal code: 7905040. ISSN: 0163-5581.
AU Appelt L C; Reicks M M
AN 1998003764 MEDLINE

L124 ANSWER 22 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 12
TI Glutathione transferase activities toward herbicides used selectively in soybean
SO PESTICIDE SCIENCE, (OCT 1997) Vol. 51, No. 2, pp. 213-222.
Publisher: JOHN WILEY & SONS LTD, BAFFINS LANE CHICHESTER, W SUSSEX, ENGLAND PO19 1UD.
ISSN: 0031-613X.
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AN 97:795169 SCISEARCH

L124 ANSWER 23 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Food seed aspartic proteinase. Cloning, expression, and application to food processing
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CODEN: DTKKEE; ISSN: 0919-9535
AU Abe, Keiko; Asakura, Tomiko

AN 1998:116735 HCAPLUS
DN 128:179594

L124 ANSWER 24 OF 43 MEDLINE on STN DUPLICATE 13
TI Differential expression of soybean cysteine proteinase inhibitor genes during development and in response to wounding and methyl jasmonate.
SO Plant physiology, (1996 Nov) 112 (3) 1201-10.
Journal code: 0401224. ISSN: 0032-0889.
AU Botella M A; Xu Y; Prabha T N; Zhao Y; Narasimhan M L; Wilson K A; Nielsen S S; Bressan R A; Hasegawa P M
AN 97092856 MEDLINE

L124 ANSWER 25 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 14
TI An inducible **glutathione S-transferase** in soybean hypocotyl is localized in the apoplast
SO PLANT PHYSIOLOGY, (NOV 1996) Vol. 112, No. 3, pp. 1185-1190.
Publisher: AMER SOC PLANT PHYSIOLOGISTS, 15501 MONONA DRIVE, ROCKVILLE, MD 20855.
ISSN: 0032-0889.
AU Flury T; Wagner E; Kreuz K (Reprint)
AN 96:868231 SCISEARCH

L124 ANSWER 26 OF 43 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Function of the oxidative burst in hypersensitive disease resistance.
SO Proceedings of the National Academy of Sciences of the United States of America, (1995) Vol. 92, No. 10, pp. 4158-4163.
CODEN: PNASA6. ISSN: 0027-8424.
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L124 ANSWER 27 OF 43 MEDLINE on STN DUPLICATE 15
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Journal code: 0401224. ISSN: 0032-0889.
AU Ulmasov T; Ohmiya A; Hagen G; Guilfoyle T
AN 95357443 MEDLINE

L124 ANSWER 28 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 16
TI A 2,4-D-INDUCIBLE **GLUTATHIONE-S-TRANSFERASE** FROM SOYBEAN (**GLYCINE-MAX**) - PURIFICATION, CHARACTERIZATION AND INDUCTION
SO PHYSIOLOGIA PLANTARUM, (JUN 1995) Vol. 94, No. 2, pp. 312-318.
ISSN: 0031-9317.
AU FLURY T; ADAM D; KREUZ K (Reprint)
AN 95:421137 SCISEARCH

L124 ANSWER 29 OF 43 LIFESCI COPYRIGHT 2005 CSA on STN
TI The ocs element in the soybean GH2/4 promoter is activated by both active and inactive auxin and salicylic acid analogues.
SO PLANT MOL. BIOL., (1994) vol. 26, no. 4, pp. 1055-1064.
ISSN: 0167-4412.
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AN 95:58509 LIFESCI

L124 ANSWER 30 OF 43 LIFESCI COPYRIGHT 2005 CSA on STN DUPLICATE 17
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ISSN: 0092-8674.
AU Levine, A.; Tenhaken, R.; Dixon, R.; Lamb, C.
AN 95:20295 LIFESCI

L124 ANSWER 31 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI THE PHYTOTOXIC EFFECTS OF AFLATOXIN B-1 - A REVIEW (1984-1994)
SO SOUTH AFRICAN JOURNAL OF SCIENCE, (JUL 1994) Vol. 90, No. 7, pp. 385-390.
ISSN: 0038-2353.
AU MCLEAN M (Reprint)
AN 94:599897 SCISEARCH

L124 ANSWER 32 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI HIGHER-PLANT METABOLISM OF XENOBIOTICS - THE GREEN LIVER CONCEPT
SO PHARMACOGENETICS, (OCT 1994) Vol. 4, No. 5, pp. 225-241.
ISSN: 0960-314X.
AU SANDERMANN H (Reprint)
AN 94:725444 SCISEARCH

L124 ANSWER 33 OF 43 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Proteins encoded by an auxin-regulated gene family of tobacco share limited but significant homology with **glutathione S-transferases** and one member indeed shows in vitro **GST** activity.
SO Plant Molecular Biology, (1993) Vol. 21, No. 6, pp. 965-972.
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AN 1993:365911 BIOSIS

L124 ANSWER 34 OF 43 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
TI **Glutathione-S-transferase** promoter;
and DNA cassette for seed storage protein, lectin or transcriptional activator expression in a transgenic plant
AN 1993-01541 BIOTECHDS
PI EP 515048 25 Nov 1992

L124 ANSWER 35 OF 43 LIFESCI COPYRIGHT 2005 CSA on STN
TI Azaserine-induced pancreatic foci: Detection, growth, labelling index and response to raw soya flour.
SO CARCINOGENESIS., (1992) vol. 13, no. 9, pp. 1519-1523.
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AN 93:105059 LIFESCI

L124 ANSWER 36 OF 43 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
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SO J.Antibiot.; (1992) 45, 9, 1385-90
CODEN: JANTAJ
AU Aoyagi T; Aoyama T; Kojima F; Matsuda N; Maruyama M; Hamada M
AN 1992-13000 BIOTECHDS

L124 ANSWER 37 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 18
TI METOLACHLOR IN CORN (ZEA-MAYS) AND SOYBEAN (**GLYCINE-MAX**) - PERSISTENCE AND BIOCHEMICAL SIGNS OF STRESS DURING ITS DETOXIFICATION
SO JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, (MAY 1992) Vol. 40, No. 5, pp. 884-889.
ISSN: 0021-8561.

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AN 92:330577 SCISEARCH

L124 ANSWER 38 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 19
TI CONJUGATION OF 2-CHLOROACETANILIDE HERBICIDES WITH GLUTATHIONE - ROLE OF MOLECULAR-STRUCTURES AND OF **GLUTATHIONE-S-TRANSFERASE** ENZYMES
SO JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, (1991) Vol. 39, No. 11, pp. 2010-2013.
AU SCARPONI L (Reprint); PERUCCI P; MARTINETTI L
AN 91:643145 SCISEARCH

L124 ANSWER 39 OF 43 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI INVESTIGATION OF XENOBIOTIC METABOLISM FOR THE QUALITATIVE EVALUATION OF PROTEIN-CONTAINING PRODUCTS PREPARED BY METHODS OF BIOTECHNOLOGY FROM VEGETABLE RAW MATERIAL.
SO Voprosy Pitaniya, (1990) No. 3, pp. 61-64.
CODEN: VPITAR. ISSN: 0042-8833.
AU MARTINCHIK A N [Reprint author]; VYSOTSKII V G; BONDAREV G I; ZILOVA I S; FEOKTISTOVA A I; MAMAEVA E M; PESKOVA E V
AN 1991:25999 BIOSIS

L124 ANSWER 40 OF 43 MEDLINE on STN DUPLICATE 20
TI Effect of experimental pancreatic growth on the content of xenobiotic-metabolising enzymes in the pancreas.
SO Gut, (1987) 28 Suppl 197-201.
Journal code: 2985108R. ISSN: 0017-5749.
AU Ross J; Barrowman J A
AN 88084658 MEDLINE

L124 ANSWER 41 OF 43 HCAPLUS COPYRIGHT 2005 ACS on STN
TI Effect of a protein isolate from soybeans on the biotransformation of xenobiotics in the rat liver
SO Farmakologiya i Toksikologiya (Moscow) (1987), 50(6), 72-4
CODEN: FATOAO; ISSN: 0014-8318
AU Martinchik, A. N.; Panova, R. V.; Feoktistova, A. I.; Bondarev, G. I.
AN 1988:36617 HCAPLUS
DN 108:36617

L124 ANSWER 42 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 21
TI INFLUENCE OF EXTRACTS FROM SOYBEAN (**GLYCINE-MAX** (L) MERR) LEAVES ON HYDROLYTIC AND **GLUTATHIONE-S-TRANSFERASE** ACTIVITY IN THE SOYBEAN LOOPER (PSEUDOPLUSIA-INCLUDENS (WALKER))
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AU DOWD P F; ROSE R L; SMITH C M; SPARKS T C (Reprint)
AN 86:315882 SCISEARCH

L124 ANSWER 43 OF 43 MEDLINE on STN DUPLICATE 22
TI Interactions of dietary methionine, lead and lindane in rats.
SO Drug-nutrient interactions, (1986) 4 (4) 349-54.
Journal code: 8307198. ISSN: 0272-3530.
AU Rowe V A; Hathcock J N; Serfass R E; Shriver C N
AN 87080034 MEDLINE

=> d ab 5,8,14,16,17

L124 ANSWER 5 OF 43 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 4

AB Soybean (**Glycine max** L.) contains homoglutathione (hGSH) as the predominant free thiol, rather than glutathione (GSH). Two cDNAs encoding glutathione transferases from soybean have been isolated and subsequently over-expressed in E. coli. Both recombinant enzymes were active as dimers (GmGST1-1, GmGST2-2) and showed **GST** and glutathione peroxidase activity toward diverse xenobiotics, including analogues of natural stress-metabolites. GSH was the preferred thiol for conjugation by GmGST1-1 to most xenobiotics with the exception of selected diphenyl ether herbicides, where hGSH was preferred. GmGST2-2 also displayed thiol preference with respect to its xenobiotic conjugating activities. These results suggest that at least two soybean GSTs demonstrate thiol specificity as well as substrate-dependent specificity.

L124 ANSWER 8 OF 43 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
AB Glutathione-transferases (GSTs) (EC-2.5.1.18) catalyze the conjugation of glutathione to electrophilic compounds and their activity in the selectivity of many herbicides is well understood. The use of molecular biology has led to the identification of a number of plant **GST** genes with most belonging to either of 2 distinct classes, type-I or type-III. A combination of biochemical and molecular biological techniques, including foreign expression of the enzymes in plants and bacteria were performed to characterize the enzymes identified. A study of **GST** mediated herbicide metabolism using recombinant enzyme has shown that notable differences exist between the **GST** present in soybean (**Glycine max**) and those in cereals such as maize (Zea mays). Of particular interest was the variation in thiol specificity observed, showing that in addition to the presence of specific **GST** isoenzymes the presence of specific thiols in certain plant species may play an important role in herbicide selectivity. (0 ref)

L124 ANSWER 14 OF 43 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation. on STN DUPLICATE 9
AB Soybeans (**Glycine max**) have nearly undetectable levels of glutathione, substituting the tripeptide homoglutathione for the same functions. Some herbicides are detoxified in soybeans by homoglutathione conjugation catalyzed by **glutathione S -transferase** (**GST**) enzyme(s). We have cloned and overexpressed a new soybean **GST** (GSTa), the previously described soybean **GST** (GH2/4), and two maize GSTs. Their ability to utilize homoglutathione and glutathione in several nucleophilic substitution reactions was measured. In most cases conjugation to subsaturating concentrations of electrophilic substrate was faster with glutathione. However homoglutathione conjugation was faster with some combinations of enzyme and substrate, notably, GH2/4 and the herbicide chlorimuron ethyl. Steady-state kinetic evaluations revealed that a ternary complex is part of the reaction mechanism, and the binding of substrates lakes place in random order. A random order rapid equilibrium model was used to compare the GH2/4-catalyzed reaction of both thiols with chlorimuron ethyl and alachlor. This revealed that catalytic rate constants do not differ significantly between the thiols. Conjugation rates with homoglutathione exceed those with glutathione when a high dissociation constant for second substrate makes formation of a glutathione containing ternary complex unfavorable, in GH2/4 this occurs with chlorimuron ethyl but not with alachlor. (C) 1998 Academic Press.

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AB Three-week-old soybean plants were sprayed with formulated herbicide safeners used in cereals and the diphenylether herbicides, fomesafen and oxyfluorfen, at a range of concns. Glutathione transferase (**GST**) activities toward 1-chloro-2,4-dinitrobenzene (CDNB) and fomesafen were then determined in crude leaf exts. Both oxyfluorfen and fomesafen enhanced **GST** activity toward CDNB, with visible herbicide injury occurring at the rates used. The herbicide safeners dichlormid, naphthalic

anhydride and BAS 145-138 gave a more modest enhancement of **GST** activity toward CDNB, but this was not associated with phytotoxicity. In contrast to the CDNB-conjugating activity, the **GST** activity toward fomesafen was unresponsive to all treatments.

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AB Soybean is known to contain multiple **glutathione S-transferases** (GSTs), but their role in herbicide detoxification and endogenous metabolism has not been well defined. Here, the authors purified several **GST** isoenzymes from 5-day-old soybean seedlings, and determined their activity toward chemical diverse xenobiotic substrates including the soybean selective herbicides, metolachlor and chlorimuron-Et. The **GST** isoenzymes were purified by a combination of hydrophobic interaction chromatog., affinity chromatog. using S-hexylglutathione, and anion-exchange chromatog. Using the different herbicide substrates it was possible to resolve the **GST** activities into at least 3 isoenzymes composed of polypeptides with mol. wts. in the range of 25-29 kDa.

=> log y

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